ON *ARIOPHANTA DALYI*, N. SUBSP., FROM MYSORE, WITH A NOTE ON *MARIÆLLA DUSSUMIERI* (VAL.).

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Read 10*th March*, 1899.

IN reply to a letter of mine, asking Mr. W. M. Daly to look for certain snails and slugs, the animals of which are unknown or imperfectly known, he has been so good as to send to me a small collection of land mollusca from the Kadur District, a part of Mysore which has hitherto escaped the notice of malacologists, but which has recently yielded that most interesting discovery *Mulleria Dalyi*.[1] Amongst the forms sent was a slug which Lieut.-Col. Godwin-Austen, to whom I forwarded the specimens, identified with *Mariælla Dussumieri* (Val.). This identification tends to confirm Mr. Cockerell's suggestion [2] that the original locality for the slug was not the island of Mahé, in the Seychelles, but the port of the same name, a French possession on the Malabar Coast, only 125 miles south by west from Kadur.[3]

Some of the species sent by Mr. Daly appear to me to be undescribed, but the specimens being barely adult, I prefer awaiting additional evidence before describing them. One mollusc, however, an *Ariophanta*, of which several adult specimens have now reached me, is, I think, worthy of notice. It is evidently allied to the Nilgiri *Ariophanta cysis*, Bs., being somewhat intermediate in form between that species and the Mahableshwar *A. intumescens*, Blf., but it differs in so many characters from both that, although I was acquainted

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[1] Ante, pp. 14, 87.

[2] Nautilus, xii (1898), p. 9.

[3] Mr. Webb, in his paper on *Mariælla* (ante, p. 147), appears to have had some difficulty in ascertaining where M. Dussumier's collections were made. That the French traveller collected extensively in Malabar there can be no doubt, for some of the most characteristic Malabar vertebrates, e.g., *Draco Dussumieri*, Dum. et Bib., and *Semnopithecus Dussumieri*, Is. Geoffr. (= *S. hypoleucus*, Blyth), both peculiar to the area, were named after him. A reference to the *Mémoires du Musée d'Histoire Naturelle*, vol. xv, p. 377 (1827), shows that M. Dussumier, who was a merchant and shipowner of Bordeaux, made several voyages to China, and landed more than once in India, where he appears to have collected at different times on both coasts, the Coromandel and Malabar. He probably also touched at the Seychelles, and collected there, for amongst various specimens presented by him to the Museum at Paris, some were from those islands.

That there was once land connection between India and the Seychelles I hold as almost certain, but since the union was probably broken up as long ago as Eocene times, the occurrence of the same species of slug in both is very unlikely.

with several of the varieties of *A. cysis*, I thought the Mysore shell must be regarded as distinct, and I described it as a separate specific form. Colonel Beddome, however, on comparing the supposed new shell with his fine series of *A. cysis* from various hill tracts near the Malabar Coast, found that all passed into each other, and on going over the series again with him I have come to the same conclusion. I have long regarded *A. ampullaroides*, Rv., and *A. auris*, Pfr., as merely varieties of *A. cysis*, and I have specimens from the Nilgiris that are intermediate in character between *A. cysis* and *A. thyræus*, though I do not think that a depressed shell, like *A. thyræus*, with a thickened margin to the aperture, should be classed as a variety of a comparatively globose and thin-lipped form like *A. cysis*.

A precisely similar case is afforded by the group of dextrorse snails known as *Helix semirugata*, Beck, (*H. Tranquebarica*, Beck), *H. Belangeri*, Desh., *H. vitellina*, Pfr., and *H. Bombayana*, Grat., except that these forms, which are connected by intermediate varieties, inhabit the lowlands of the Indian Peninsula and Ceylon, and have a far greater range than *Ariophanta cysis* and its allies, which are confined to the Southern Sahyádri, or Western Ghats, and are not known to occur north of Mysore. Lieut.-Col. Godwin-Austen has lately shown[1] that *H. semirugata* and several other Indian snails have animals closely resembling that of the type of *Ariophanta*.

It is difficult to say what is the best solution of the problem presented by the nomenclature of species or specific groups so varied as *A. cysis*. Many naturalists will probably object to classing all the forms together, and in any case some distinctive term is necessary for varieties or subspecies that exhibit so many peculiarities as the form figured below. I shall therefore give a description and a subspecific name by which it may be identified.

ARIOPHANTA DALYI, n. subsp. (A. CYSIS, var.).

Testa sinistrorsa, umbilicata, depresso-globosa, tenuis, oblique striata, fusco-cornea, fascia pallida ad peripheriam circumdata, subtus juxta umbilicum pallido-cornea; spira convexo-conoidea, apice obtuso, sutura leviter impressa; anfr. 5 convexiusculi, ultimus non descendens, ad peripheriam obtuse angulatus, antice latior, superne planulatus, subtus tumidus, nitidus; apertura ampla, diagonalis, oblongo-ovata, vix lunata, margine superiori recto; perist. album, interdum rosco-tinctum, margine superiori vix, dextrali basalique expansiusculis, columellari reflexo. Diam. maj. 39, min. 31; alt. 22 mm.

Hab.—Balur, province of Kadur, Mysore.

This form differs from typical *A. cysis* by having a higher spire, by the last whorl being subangulate at the periphery, by its darker colour and by the whitish band round the last whorl. The mouth, too, is differently shaped, owing to the upper margin in *A. Dalyi* being

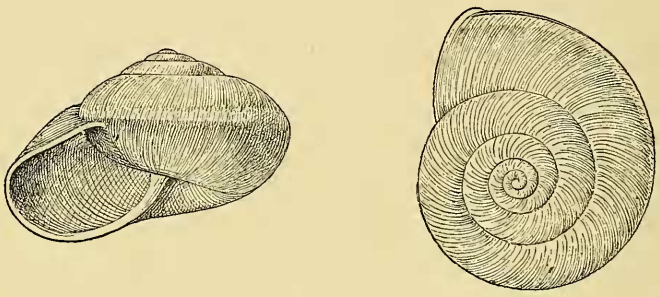
[1] Land and Fresh-water Mollusca of India, ii, p. 81.

straight, not curved. The spiral striation of *A. thyræus* is completely wanting, as it is also in typical *A. cysis*. The form of *A. cysis* figured in the Conchologia Indica, pl. xxv, fig. 5, and said by Hanley (t.c., Systematic List of Species, p. vii, footnote) to be the variety named *Helix ampullaroides* by Reeve, approaches more nearly to *A. Dalyi* than any other described race, but still differs considerably.

From *A. intumescens* the present form may be at once distinguished by its more depressed form, much wider umbilicus, and differently shaped mouth.

I am indebted to Lieut.-Col. Godwin-Austen for the following notes on the animal:—The generative organs are like those of *A. lævipes*,[1] only the calc-sac is not so long—it is hardly developed at all. The spermatheca is similar, small and sessile. Neck lobes as in other species of the genus *Ariophanta*, the left in two lappets separated by a long interval. The radula has the formula—

$$50 : 3 : 17 : 1 : 17 : 3 : 50$$
$$= 70 : 1 : 70$$



Ariophanta Dalyi (*A. cysis*, var.).

The form of the teeth as in *A. immerita* and *A. cysis*,[2] the laterals aculeate. Typical *A. cysis* has a greater number of lateral teeth, a Nilgiri radula exhibiting 82 : 1 : 82.[3]

The following is a list of the species of typical sinistrorse *Ariophanta* known to occur in the Indian Peninsula, and their authentic localities. I have collected six species out of the eight myself.

Ariophanta lævipes (Müll.): syn. *Helix trifasciata*, Chemn. Bombay and its neighbourhood; Eastern Guzerat. Type of the genus *Ariophanta*.

Ariophanta Laidlayana (Bs.). Western and South-Western Bengal.

Ariophanta Cadapaensis, Nev.: syn. *Helix Nicobarica*, Mart. and Chemn. Cuddapah (not Nicobar Islands).

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[1] Land and Fresh-water Mollusca of India, ii, p. 81, pl. lxxx, figs. 5–5*c*.
[2] Op. cit., ii, pl. lxxxii, figs. 6, 7.
[3] Op. cit., i, p. 139.

Ariophanta interrupta (Bs.): syn. *Helix Himalayana*, Lea. Bengal, Behar, Orissa, Vizagapatam (not Himalayas).

Ariophanta immerita (Blf.). South Canara. Doubtfully separable from the last.

Ariophanta Bajadera (Pfr.): syn. *Helix ammonea*, Val. Bombay and neighbourhood.

Ariophanta intumescens, Blf. Mahableshwar.

Ariophanta cysis (Bs.): syn. *Helix auris*, Pfr.; *H. cystis*, Rv.; *H. ampullaroides*, Rv.; and var. *A. Dalyi*, Blf. Southern Sahyádri, from Mysore to the Nilgiris.

Ariophanta thyreus, (Bs.): syn. *Helix rhyssolemma*, Alb. Balarangam, Nilgiri and Anarmalai Hills, S. India.

No species is known from either the Himalayas or Ceylon. For this reason the name *Himalayana*, applied to a species by Lea, is misleading, and Benson's name *interrupta*, given a year later, should be preferred. For similar reasons the name *Nicobarica* is objectionable.

Theobald, in his Catalogue of the Land and Fresh-water Shells of British India, p. 22, includes a species *A. cyclotrema*, from the Sumeysur (Someshwar) Hills, at the base of the Himalayas, north of Tirhut. I have a typical specimen given to me by Mr. Theobald, and I have no doubt the species belongs to *Planispira* or *Trachia*, a section of *Helix* proper. Colonel Godwin-Austen has lately shown reasons for removing the Moulmein *H. retrorsa* from *Ariophanta*,[1] and uniting it to *Hemiplecta*, or some similar generic group. It thus appears probable that *Ariophanta* proper is confined absolutely to the Peninsula of India. So far as is at present known the dextrorse forms of the same genus (*Nilgiria*, G.-A.) are similarly restricted, except that some of them occur in Ceylon.

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[1] Land and Fresh-water Mollusca of India, i, p. 133; ii, p. 82.